IN THE CLAIMS:

Please cancel Claims 1-15, 23, 25-44, 51, 53-57, 60, 64-79, 82, 90, 92, 94, 96-99, 102, 104, 105, and 108-118, without prejudice or disclaimer of subject matter. The following is a complete listing of claims and replaces all prior versions and listings of claims in the present application:

Claims 1-16 (canceled).

Claim 17 (previously presented): A method according to claim 19, further comprising deciding that a sub-voxel does not form part of the three-dimensional surface and so should be removed if the sub-voxel does not meet the at least one criterion.

Claim 18 (previously presented): A method according to claim 19, further comprising repeating steps c, d and e for any sub-voxel that does not meet the at least one criterion.

Claim 19 (previously presented): In an image processing apparatus having a processor for processing image data representing images of an object taken from a plurality of different camera positions, a method of processing image data to derive a representation of a three-dimensional surface of the object, the method comprising the steps of:

(a) defining an initial volume containing the object surface as an initial

space formed of voxels;

(b) accessing data representing images of the object recorded at different camera positions with respect to the object;

(c) checking to see if a voxel meets at least one criterion by projecting that voxel into at least one of the images;

(d) dividing, if the voxel does not meet the at least one criterion, the voxel into subsidiary voxels; and

(e) checking to see if the subsidiary voxels meet at least one criterion by projecting the subsidiary voxels into at least one of the image,

wherein the at least one criterion comprises any one or more of the following:

1) a color variance in a pixel patch to which the voxel projects in an image has a value lower than a predetermined value;

2) a difference in color or average color between pixel patches to which the voxel projects in different images has a standard deviation less than a predetermined value; and

3) the voxel is not partially occluded by a voxel or subsidiary voxels of smaller size than the voxel.

Claim 20 (previously presented): In an image processing apparatus having a processor for processing image data representing images of an object taken from a plurality of different camera positions, a method of processing image data to derive a representation of a

three-dimensional surface of the object, the method comprising the steps of:

(a) defining an initial volume containing the object surface as an initial space formed of voxels;

(b) accessing data representing images of the object recorded at different camera positions with respect to the object;

(c) determining the area corresponding to a given voxel in each image in which the voxel is visible;

(d) comparing characteristics of each of the image areas corresponding to the given voxel;

(e) deriving from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the given voxel; and

(f) sub-dividing a voxel into subsidiary voxels in response to the derived value exceeding a threshold value and repeating steps (c) to (e) for each subsidiary voxel.

Claim 21 (original): A method according to claim 20, further comprising:

(g) in response to a subsidiary voxel having a derived value exceeding a threshold value and a size greater than a minimum size, sub-dividing that subsidiary voxel into subsidiary voxels and repeating steps (c) to (e) for each subsidiary voxel of that subsidiary voxel; and

(h) removing any subsidiary voxel of the minimum size having a derived

value exceeding the threshold value.

Claim 22 (original): A method according to claim 20, which comprises repeating steps (c) to (h) until the degree of inconsistency for all non-occluded voxels and subsidiary voxels is below a predetermined value.

Claim 23 (canceled).

Claim 24 (previously presented): In an image processing apparatus having a processor for processing image data representing images of an object taken from a plurality of different camera positions, a method of processing image data to derive a representation of a three-dimensional surface of the object, the method comprising the steps of:

(a) defining an initial volume containing the object surface as an initial space formed of voxels;

(b) determining the area corresponding to a voxel in each image in which that voxel is visible;

(c) comparing characteristics of each of the image areas corresponding to the voxel to derive a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the voxel, and when the derived value for a voxel exceeds a threshold value,

(i) sub-dividing the voxel into subsidiary voxels;

(ii) determining the region corresponding to each sub-voxel in each image in which that sub-voxel is visible;

(iii) comparing characteristics of the image regions; and

(iv) removing the voxel only if there is no set of regions which contains a region from each image and for which the characteristics are not inconsistent.

Claims 25-45 (canceled).

Claim 46 (previously presented): An apparatus according to claim 48, wherein said processor means is operable to decide that a sub-voxel does not form part of the three-dimensional surface and so should be removed if the sub-voxel does not meets the at least one criterion.

Claim 47 (previously presented): An apparatus according to claim 48, wherein said processor means is operable to repeat c, d and e for any sub-voxel that does not meet the at least one criterion.

Claim 48 (previously presented): In an image processing apparatus for processing image data representing images of an object taken from a plurality of different camera positions to derive a representation of a three-dimensional surface of the object, the apparatus comprising:

means for defining an initial volume containing the object surface as an initial space formed of voxels;

means for accessing data representing images of the object recorded at different camera positions with respect to the object; and

processor means operable:

(c) to check to see if a voxel meets at least one criterion by projecting that voxel into at least one of the images;

(d) if the voxel does not meet the at least one criterion, to divide the voxel into subsidiary voxels; and

(e) to check to see if the subsidiary voxels meets at least one criterion by projecting the subsidiary voxels into at least one of the images,

wherein the at least one criterion comprises any one or more of the following:

1) the color variance in a pixel patch to which the voxel projects in an image has a value lower than a predetermined value;

2) the difference in color or average color between pixel patches to which the voxel projects in different images has a standard deviation less than a predetermined value; and

3) the voxel is not partially occluded by a voxel or subsidiary voxels of smaller size than the voxel.

Claim 49 (original): An image processing apparatus for processing image data representing images of an object taken from a plurality of different camera positions to derive a representation of a three-dimensional surface of the object, the apparatus comprising:

means for defining an initial volume containing the object surface as an initial space formed of voxels;

means for accessing data representing images of the object recorded at different camera positions with respect to the object; and

processor means operable:

(i) to determine the area corresponding to a given voxel in each image in which the voxel is visible;

(ii) to compare characteristics of each of the image areas corresponding to the given voxel;

(iii) to derive from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the given voxel;

(iv) to sub-divide a voxel into subsidiary voxels in response to the derived value exceeding a threshold value and to repeat steps (i) to (iii) for each subsidiary voxel;

(v) in response to a subsidiary voxel having a derived value exceeding a threshold value and a size greater than a minimum size, to sub-divide that subsidiary voxel into subsidiary voxels and to repeat (i) to (iii) for each subsidiary voxel of that subsidiary voxel;

(vi) to remove any subsidiary voxel of the minimum size having a derived value exceeding the threshold value; and

(vii) to repeat (i) to (vi) for each voxel that is not occluded by another voxel to provide a representation of the three-dimensional object surface consisting of the remaining non-occluded voxels and subsidiary voxels.

Claim 50 (previously presented): An apparatus according to claim 49, wherein said processor means is operable to repeat (i) to (vi) until the degree of inconsistency for all non-occluded voxels is below a predetermined value.

Claim 51 (canceled).

Claim 52 (original): An image processing apparatus for processing image data representing images of an object taken from a plurality of different camera positions, a method of processing image data to derive a representation of a three-dimensional surface of the object, the apparatus comprising:

means for defining an initial volume containing the object surface as an initial space formed of voxels;

means for accessing data representing images of the object recorded at different camera positions with respect to the object; and

processor means operable:

(a) to determine the area corresponding to a voxel in each image in which that voxel is visible;

(b) to compare characteristics of each of the image areas corresponding to the same voxel; and

(c) to derive from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the voxel and, when the derived value for a voxel exceeds a threshold value,

(i) to sub-divide the voxel into subsidiary voxels,

(ii) to determine the region corresponding to each sub-voxel in each image in which that sub-voxel is visible,

(iii) to compare characteristics of the image regions, and

(iv) to remove the voxel only if there is no set of regions which contains a region from each image and for which the characteristics are not inconsistent.

Claims 53-57 (canceled).

Claim 58 (previously presented): A method according to claim 19, further comprising:

accessing data representing a further image of the object recorded at different camera position; and

then repeating steps of claim 19 using that further image.

Claim 59 (previously presented): A method according to claim 19, further comprising:

accessing data representing a set of images consisting of a sub-set of the images accessed at step (b) and a further image of the object recorded at a different camera position; and

repeating steps of claim 19 using that set of images.

Claim 60 (canceled).

Claim 61 (previously presented): An apparatus according to claim 48, wherein said processor means is also operable to access data representing a further image of the object recorded at a different camera position and then to repeat steps set out in claim 48 using that further image.

Claim 62 (previously presented): An apparatus according to claim 48, wherein said processor means is also operable to access data representing a set of images consisting of a sub-set of images previously accessed and a further image of the object recorded at a different camera position and then to repeat the steps set out in claim 48 using that set of images.

Claim 63 (previously presented): An apparatus according to claim 48, wherein said processor means is further operable:

to determine the viewing volume for each camera position;

to determine the volume bounded by the intersection of the viewing volumes; and

to set the bounded volume as an initial space for use in deriving a representation of the three-dimensional surface of the object using the images.

Claims 64-79 (canceled).

Claim 80 (previously presented): In an image processing system for processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and using the images and the camera positions to generate the three-dimensional computer model, a method of processing the image data to derive a representation of a three-dimensional surface of the object, the method comprising the steps of:

(a) defining an initial volume containing the object surface as an initial space formed of voxels;

(b) accessing data representing images of the object recorded at different camera positions with respect to the object;

(c) checking to see if a voxel meets at least one criterion by projecting that voxel into at least one of the images;

(d) if the voxel does not meet the at least one criterion, dividing the voxel

into subsidiary voxels; and

(e) then checking to see if the subsidiary voxels meets at least one criterion by projecting the subsidiary voxels into at least one of the images,

wherein the at least one criterion comprises any one or more of the following:

1) a color variance in a pixel patch to which the voxel projects in an image having a value lower than a predetermined value;

2) a difference in color or average color between pixel patches to which the voxel projects in different images having a standard deviation less than a predetermined value; and

3) the voxel is not partially occluded by a another voxel or subsidiary voxels of a smaller size than the voxel.

Claim 81 (original): In an image processing system for processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and using the images and the camera positions to generate the three-dimensional computer model, a method of processing the image data to derive a representation of a three-dimensional surface of the object, the method comprising the steps of:

(a) defining an initial volume containing the object surface as an initial space formed of voxels;

(b) accessing data representing images of the object recorded at different

camera positions with respect to the object;

(c) determining the area corresponding to a given voxel in each image in which the voxel is visible;

(d) comparing characteristics of each of the image areas corresponding to the given voxel;

(e) deriving from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the given voxel;

(f) sub-dividing a voxel into subsidiary voxels in response to the derived value exceeding a threshold value and repeating steps (c) to (e) for each subsidiary voxel;

(g) in response to a subsidiary voxel having a derived value exceeding a threshold value and a size greater than a minimum size, sub-dividing that subsidiary voxel into subsidiary voxels and repeating steps (c) to (e) for each subsidiary voxel of that subsidiary voxel;

(h) removing any subsidiary voxel of the minimum size having a derived value exceeding the threshold value; and

(i) repeating steps (c) to (h) for each voxel that is not occluded by another voxel to provide a representation of the three-dimensional object surface consisting of the remaining non-occluded voxels and subsidiary voxels.

Claim 82 (canceled).

Claim 83 (original): In a method of processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and using the images and the camera positions to generate the three-dimensional computer model, an improvement comprising processing the image data to derive a computer representation of a three-dimensional surface of the object by:

(a) defining an initial volume containing the object surface as an initial space formed of voxels;

(b) accessing data representing images of the object recorded at different camera positions with respect to the object;

(c) determining the area corresponding to a given voxel in each image in which the voxel is visible;

(d) comparing characteristics of each of the image areas corresponding to the given voxel;

(e) deriving from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the given voxel;

(f) sub-dividing a voxel into subsidiary voxels in response to the derived value exceeding a threshold value and repeating steps (c) to (e) for each subsidiary voxel;

(g) in response to a subsidiary voxel having a derived value exceeding a threshold value and a size greater than a minimum size, sub-dividing that subsidiary voxel into subsidiary voxels and repeating steps (c) to (e) for each subsidiary voxel of that subsidiary voxel;

(h) removing any subsidiary voxel of the minimum size having a derived value exceeding the threshold value; and

(i) repeating steps (c) to (h) for each voxel that is not occluded by another voxel to provide a representation of the three-dimensional object surface consisting of the remaining non-occluded voxels and subsidiary voxels.

Claim 84 (original): In a method of processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and using the images and the camera positions at which the images were recorded and using the images and the camera positions to generate the three-dimensional computer model, a method for processing the image data to derive a computer representation of a three-dimensional surface of the object by:

(a) defining an initial volume containing the object surface as an initial space formed of voxels;

(b) accessing data representing images of the object recorded at different camera positions with respect to the object;

(c) determining the area corresponding to a given voxel in each image in which that voxel is visible;

(d) comparing characteristics of each of the image areas corresponding to the given voxel;

(e) deriving from the compared characteristics a value representing the

degree of any inconsistency between the characteristics of the image areas corresponding to the given voxel;

(f) sub-dividing a voxel into subsidiary voxels in response to the derived value exceeding a threshold value and repeating steps (c) to (e) for each subsidiary voxel;

(g) removing any subsidiary voxel having a derived value exceeding a threshold value; and

(h) repeating steps (c) to (g) for each voxel that is not occluded by another voxel to provide a representation of the three-dimensional object surface consisting of the remaining non-occluded voxels and subsidiary voxels.

Claim 85 (original): In a method of processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and using the images and the camera positions to generate the three-dimensional computer model, a method for processing the image data to derive a computer representation of a three-dimensional surface of the object by:

(a) defining an initial volume containing the object surface as an initial space formed of voxels;

(b) accessing data representing images of the object recorded at different camera positions with respect to the object;

(c) determining the area corresponding to a given voxel in each image in which the voxel is visible;

(d) comparing characteristics of each of the image areas corresponding to the given voxel;

(e) deriving from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the given voxel;

(f) sub-dividing a voxel into subsidiary voxels in response to the derived value exceeding a threshold value and repeating steps (c) to (e) for each subsidiary voxel;

(g) in response to a subsidiary voxel having a derived value exceeding a threshold value and a size greater than a minimum size, sub-dividing that subsidiary voxel into subsidiary voxels and repeating steps (c) to (e) for each subsidiary voxel of that subsidiary voxel;

(h) removing any subsidiary voxel of the minimum size having a derived value exceeding the threshold value; and

(i) repeating steps (c) to (h) for each voxel that is not occluded by another voxel to provide a representation of the three-dimensional object surface consisting of the remaining non-occluded voxels and subsidiary voxels.

Claim 86 (previously presented): In an image processing system for processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and by using the images and the camera positions to generate the three-dimensional computer model, an apparatus for processing image data representing images of an object taken from a plurality of different

camera positions to derive a representation of a three-dimensional surface of the object, the apparatus comprising a processor configured by processor instructions to operate:

(a) to define an initial volume containing the object surface as an initial space formed of voxels;

(b) to access data representing images of the object recorded at different camera positions with respect to the object;

(c) to check to see if a voxel meets at least one criterion by projecting that voxel into at least one of the images;

(d) if the voxel does not meet the at least one criterion, to divide the voxel into subsidiary voxels; and

(e) then to check to see if the subsidiary voxels meets at least one criterion by projecting the subsidiary voxels into at least one of the images,

wherein the at least one criterion comprises any one or more of the following:

1) a color variance in a pixel patch to which the voxel projects in an image having a value lower than a predetermined value;

2) a difference in color or average color between pixel patches to which the voxel projects in different images having a standard deviation less than a predetermined value; and

3) the voxel is not partially occluded by a another voxel or subsidiary voxels of a smaller size than the voxel.

Claim 87 (previously presented): In an image processing system for processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and by using the images and the camera positions to generate the three-dimensional computer model, an apparatus for processing image data representing images of an object taken from a plurality of different camera positions to derive a representation of a three-dimensional surface of the object, the apparatus comprising a processor configured by processor instructions:

(a) to define an initial volume containing the object surface as an initial space formed of voxels;

(b) to access data representing images of the object recorded at different camera positions with respect to the object;

(c) to determine the area corresponding to a given voxel in each image in which the voxel is visible;

(d) to compare characteristics of each of the image areas corresponding to the given voxel;

(e) to derive from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the given voxel;

(f) to sub-divide a voxel into subsidiary voxels in response to the derived value exceeding a threshold value and repeating steps (c) to (e) for each subsidiary voxel;

(g) in response to a subsidiary voxel having a derived value exceeding a

threshold value and a size greater than a minimum size, to sub-divide that subsidiary voxel into subsidiary voxels and to repeat steps (c) to (e) for each subsidiary voxel of that subsidiary voxel;

(h) to remove any subsidiary voxel of the minimum size having a derived value exceeding the threshold value; and

(i) to repeat steps (c) to (h) for each voxel that is not occluded by another voxel to provide a representation of the three-dimensional object surface consisting of the remaining non-occluded voxels and subsidiary voxels.

Claim 88 (previously presented): In an image processing system for processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and by using the images and the camera positions to generate the three-dimensional computer model, an improvement comprising an apparatus for processing image data representing images of an object taken from a plurality of different camera positions to derive a representation of a three-dimensional surface of the object, the apparatus comprising a processor configured by processor instructions to operate:

(a) to define an initial volume containing the object surface as an initial space formed of voxels;

(b) to access data representing images of the object recorded at different camera positions with respect to the object;

(c) to determine the area corresponding to a given voxel in each image in

which that voxel is visible;

(d) to compare characteristics of each of the image areas corresponding to the given voxel;

(e) to derive from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the given voxel;

(f) to sub-divide a voxel into subsidiary voxels in response to the derived value exceeding a threshold value and to repeat steps (c) to (e) for each subsidiary voxel;

(g) to remove any subsidiary voxel having a derived value exceeding a threshold value; and

(h) to repeat steps (c) to (g) for each voxel that is not occluded by another voxel to provide a representation of the three-dimensional object surface consisting of the remaining non-occluded voxels and subsidiary voxels.

Claim 89 (previously presented): In an image processing system for processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and by using the images and the camera positions to generate the three-dimensional computer model, an improvement comprising an apparatus for processing image data representing images of an object taken from a plurality of different camera positions to derive a representation of a three-dimensional surface of the object, the apparatus comprising a processor configured by

processor instructions:

(a) to define an initial volume containing the object surface as an initial space formed of voxels;

(b) to access data representing images of the object recorded at different camera positions with respect to the object;

(c) to determine the area corresponding to a given voxel in each image in which the voxel is visible;

(d) to compare characteristics of each of the image areas corresponding to the given voxel;

(e) to derive from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the given voxel;

(f) to sub-divide a voxel into subsidiary voxels in response to the derived value exceeding a threshold value and repeating steps (c) to (e) for each subsidiary voxel;

(g) in response to a subsidiary voxel having a derived value exceeding a threshold value and a size greater than a minimum size, to sub-divide that subsidiary voxel into subsidiary voxels and to repeat steps (c) to (e) for each subsidiary voxel of that subsidiary voxel;

(h) to remove any subsidiary voxel of the minimum size having a derived value exceeding the threshold value; and

(i) to repeat steps (c) to (h) for each voxel that is not occluded by another voxel to provide a representation of the three-dimensional object surface consisting of the

remaining non-occluded voxels and subsidiary voxels.

Claim 90 (canceled).

Claim 91 (previously presented): In a method of processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and using the images and camera positions to generate the three-dimensional computer model, an improvement comprising processing the image data to derive a computer representation of a three-dimensional surface of the object by:

(a) defining an initial volume containing the object surface as an initial space formed of voxels;

(b) accessing data representing images of the object recorded at different camera positions with respect to the object;

(c) determining the area corresponding to a voxel in each image in which that voxel is visible;

(d) comparing characteristics of each of the image areas corresponding to the same voxel; and

(e) deriving from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the voxel; and, when the derived value for a voxel exceeds a threshold value:

(i) sub-dividing the voxel into subsidiary voxels;

(ii) determining the region corresponding to each sub-voxel in each image in which that sub-voxel is visible;

(iii) comparing characteristics of the image regions; and

(iv) removing the voxel only if there is no set of regions which contains a region from each image and for which the characteristics correspond.

Claim 92 (canceled).

Claim 93 (previously presented): In an image processing system for processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and by using the images and the camera positions to generate the three-dimensional computer model, an apparatus for processing the image data to derive a computer representation of a three-dimensional surface of the object, the apparatus comprising a processor configured by processor instructions to operate:

(a) to define an initial volume containing the object surface as an initial space formed of voxels;

(b) to access data representing images of the object recorded at different camera positions with respect to the object;

(c) to determine the area corresponding to a voxel in each image in which

that voxel is visible;

(d) to compare characteristics of each of the image areas corresponding to the same voxel; and

(e) to derive from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the voxel; and, when the derived value for a voxel exceeds a threshold value:

(i) to sub-divide the voxel into subsidiary voxels;

(ii) to determine the region corresponding to each sub-voxel in each image in which that sub-voxel is visible;

(iii) to compare characteristics of the image regions; and

(iv) to remove the voxel only if there is no set of regions which contains a region from each image and for which the characteristics correspond.

Claim 94 (canceled).

Claim 95 (previously presented): In an image processing system for processing image data defining images of an object to generate a three-dimensional computer model of the object by determining camera positions at which the images were recorded and by using the images and the camera positions to generate the three-dimensional computer model, an improvement comprising an apparatus for processing the image data to derive a computer representation of a three-dimensional surface of the object, the apparatus comprising a processor

configured by processor instructions to operate:

(a) to define an initial volume containing the object surface as an initial space formed of voxels;

(b) to access data representing images of the object recorded at different camera positions with respect to the object;

(c) to determine the area corresponding to a voxel in each image in which that voxel is visible;

(d) to compare characteristics of each of the image areas corresponding to the same voxel; and

(e) to derive from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the voxel; and, when the derived value for a voxel exceeds a threshold value:

(i) to sub-divide the voxel into subsidiary voxels;

(ii) to determine the region corresponding to each sub-voxel in each image in which that sub-voxel is visible;

(iii) to compare characteristics of the image regions; and

(iv) to remove the voxel only if there is no set of regions which contains a region from each image and for which the characteristics correspond.

Claims 96-99 (canceled).

Claim 100 (previously presented): In an image processing apparatus for processing image data representing images of an object taken from a plurality of different camera positions to derive a representation of a three-dimensional surface of the object, the apparatus comprising:

an initial volume definer for defining an initial volume containing the object surface as an initial space formed of voxels;

a data accessor for accessing data representing images of the object recorded at different camera positions with respect to the object; and

a processor operable:

(c) to check to see if a voxel meets at least one criterion by projecting that voxel into at least one of the images;

(d) if the voxel does not meet the at least one criterion, to divide the voxel into subsidiary voxels; and

(e) then to check to see if the subsidiary voxels meets at least one criterion by projecting the subsidiary voxels into at least one of the images,

wherein the at least one criterion comprises any one or more of the following:

1) a color variance in a pixel patch to which the voxel projects in an image having a value lower than a predetermined value;

2) a difference in color or average color between pixel patches to which the voxel projects in different images having a standard deviation less than a predetermined value; and

3) the voxel is not partially occluded by a another voxel or subsidiary voxels of a smaller size than the voxel.

Claim 101 (original): An image processing apparatus for processing image data representing images of an object taken from a plurality of different camera positions to derive a representation of a three-dimensional surface of the object, the apparatus comprising:

an initial volume definer for defining an initial volume containing the object surface as an initial space formed of voxels;

a data accessor for accessing data representing images of the object recorded at different camera positions with respect to the object; and

a processor operable:

(i) to determine the area corresponding to a given voxel in each image in which the voxel is visible;

(ii) to compare characteristics of each of the image areas corresponding to the given voxel;

(iii) to derive from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the given voxel;

(iv) to sub-divide a voxel into subsidiary voxels in response to the derived value exceeding a threshold value and to repeat steps (i) to (iii) for each subsidiary voxel;

(v) in response to a subsidiary voxel having a derived value

exceeding a threshold value and a size greater than a minimum size, to sub-divide that subsidiary voxel into subsidiary voxels and to repeat (i) to (iii) for each subsidiary voxel of that subsidiary voxel;

(vi) to remove any subsidiary voxel of the minimum size having a derived value exceeding the threshold value; and

(vii) to repeat (i) to (vi) for each voxel that is not occluded by another voxel to provide a representation of the three-dimensional object surface consisting of the remaining non-occluded voxels and subsidiary voxels.

Claim 102 (canceled).

Claim 103 (original): An image processing apparatus for processing image data representing images of an object taken from a plurality of different camera positions, a method of processing image data to derive a representation of a three-dimensional surface of the object, the apparatus comprising:

an initial volume definer for defining an initial volume containing the object surface as an initial space formed of voxels;

a data accessor for accessing data representing images of the object recorded at different camera positions with respect to the object; and

a processor operable:

(a) to determine the area corresponding to a voxel in each image in

which that voxel is visible;

(b) to compare characteristics of each of the image areas corresponding to the same voxel; and

(c) to derive from the compared characteristics a value representing the degree of any inconsistency between the characteristics of the image areas corresponding to the voxel and, when the derived value for a voxel exceeds a threshold value,

(i) to sub-divide the voxel into subsidiary voxels,

(ii) to determine the region corresponding to each sub-voxel in each image in which that sub-voxel is visible,

(iii) to compare characteristics of the image regions, and

(iv) to remove the voxel only if there is no set of regions which contains a region from each image. and for which the characteristics are not inconsistent.

Claims 104 and 105 (canceled).

Claim 106 (previously presented): In an image processing apparatus for processing image data representing images of an object taken from a plurality of different camera positions to derive a representation of a three-dimensional surface of the object, the apparatus comprises:

means for defining an initial volume containing the object surface as an initial space formed of voxels;

means for accessing data representing images of the object recorded at different camera positions with respect to the object; and

processor means operable:

(a) to check to see if a voxel meets at least one criterion by projecting that voxel into at least one of the images;

(b) to divide, if the voxel does not meet the at least one criterion, the voxel into subsidiary voxels; and

(c) to check to see if the subsidiary voxel meets at least one criterion by projecting the subsidiary voxels into at least one of the images,

wherein the processor means is operable to compare characteristics of each of the image areas corresponding to the same voxel by comparing the colors of each of the image areas.

Claim 107 (previously presented): An apparatus according to claim 49, wherein said processor means is operable to compare characteristics of each of the image areas corresponding to the same voxel by comparing the colors of each of the image areas.

Claims 108-118 (canceled).